

Claims

1. A device for providing input to a touch screen, including:

a base member and means for securing said base member to the touch

5 screen;

means associated with said base member for provoking a touch detection
by the touch screen.

2. The device for providing input to a touch screen of claim 1, wherein

10 said base member includes a longitudinally extending rib having a bottom surface
adapted to impinge on the touch screen.

3. The device for providing input to a touch screen of claim 2, wherein said
rib is sufficiently flexible to be deflected by a fingertip touch at an outer surface

15 of said rib and said bottom surface is likewise deflected to provoke a touch
detection.

4. The device for providing input to a touch screen of claim 2, wherein said
rib is formed of a material sufficiently lubricious to enable a sliding touch along

20 said rib.

5. The device for providing input to a touch screen of claim 3, further including a fader cap, and means for securing said fader cap to said rib in longitudinally sliding fashion.

5 6. The device for providing input to a touch screen of claim 5, wherein said means for securing said fader cap includes at least one flange extending longitudinally along said rib, said fader cap including a structural element adapted to engage said flange in freely sliding fashion.

10 7. The device for providing input to a touch screen of claim 5, further including a stylus tip extending from said cap toward said touch screen.

15 8. The device for providing input to a touch screen of claim 7, wherein the touch screen is adapted to detect the position of a touch signal applied thereto, said fader cap including means for generating said touch signal and transmitting said touch signal through said stylus tip to said touch screen.

20 9. The device for providing input to a touch screen of claim 8, further including power supply means in said fader cap for driving said touch signal generator.

10. The device for providing input to a touch screen of claim 9, wherein said power supply means includes a battery.

11. The device for providing input to a touch screen of claim 9, wherein
said power supply means includes a photovoltaic cell.

5 12. The device for providing input to a touch screen of claim 9, wherein
said power supply means includes at least one power rail extending along said rib
and electrically accessible by said touch signal generator in said fader cap.

10 13. The device for providing input to a touch screen of claim 12, further
including at least one conductive trace extending to said base member and
connected to said at least one power rail.

15 14. The device for providing input to a touch screen of claim 6, further
including a pair of flanges disposed in lateral opposition and extending
longitudinally along said rib.

20 15. The device for providing input to a touch screen of claim 13, further
including a fader cap, said means for securing said fader cap including structural
elements to engage said pair of flanges and retain said fader cap on said rib in
freely sliding fashion.

16. The device for providing input to a touch screen of claim 2, further including a plurality of closely spaced feet projecting from said bottom surface of said rib to engage the surface of a touch screen device.

5 17. The device for providing input to a touch screen of claim 1, wherein said means for securing includes an adhesive layer formed on a bottom surface of said base member.

10 18. The device for providing input to a touch screen of claim 17, said adhesive layer being preferentially more adherent to said base member than to the surface of a touch screen device.

15 19. The device for providing input to a touch screen of claim 1, wherein a plurality of said devices are provided, said plurality of devices being joined in a crack-and-peel sheet.

20 20. The device for providing input to a touch screen of claim 1, wherein said base member comprises a post having a bottom surface adapted to impinge on the touch screen.

21. The device for providing input to a touch screen of claim 20, further including a knob cap secured coaxially to said post and adapted for rotation about a common axis.

22. The device for providing input to a touch screen of claim 21, further including a stylus tip extending from said knob cap toward said touch screen.

5 23. The device for providing input to a touch screen of claim 22, wherein the touch screen is adapted to detect the position of a touch signal applied thereto, said knob cap including means for generating said touch signal and transmitting said touch signal through said stylus tip to said touch screen.

10 24. The device for providing input to a touch screen of claim 23, further including power supply means in said knob cap for driving said touch signal generator.

15 25. The device for providing input to a touch screen of claim 1, further including an RF power supply means includes a battery.

26. The device for providing input to a touch screen of claim 24, wherein said power supply means includes a photovoltaic cell.

20 27. The device for providing input to a touch screen of claim 24, wherein said power supply means includes a conductive trace extending to said base member.

28. The device for providing input to a touch screen of claim 1, further including power supply means for operating said means for provoking a touch detection, said power supply means includes means for transmitting RF power wirelessly to said device.

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29. The device for providing input to a touch screen of claim 1, further including power supply means for operating said means for provoking a touch detection, said power supply means includes means for transmitting IR power wirelessly to said device.

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30. The device for providing input to a touch screen of claim 1, further including a groove formed in the touch screen, said base member being received and recessed in said groove.

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31. The device for providing input to a touch screen of claim 30, wherein said device includes a knob controller.

32. The device for providing input to a touch screen of claim 30, wherein said device includes a fader track.

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33. The device for providing input to a touch screen of claim 30, wherein said device includes a joystick.

34. The device for providing input to a touch screen of claim 20, further including a computer having a graphic display associated with the touch screen, and software means for receiving touch input provoked by said post with fingertip pressure.

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35. The device for providing input to a touch screen of claim 34, said software means including means for analyzing touch inputs provoked by said post with fingertip pressure and emulating specific diverse controller characteristics in response to said touch inputs.

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36. The device for providing input to a touch screen of claim 35, wherein said software means includes menu selections to elicit selection of various controller emulations related to said post.

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37. The device for providing input to a touch screen of claim 35, said software means including means for analyzing initial touch inputs provoked by said post with fingertip pressure and determining the center point of said initial touch inputs.

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38. The device for providing input to a touch screen of claim 37, wherein said software means further places a graphic symbol on said graphic display corresponding to the center point location ascribed to said post

39. The device for providing input to a touch screen of claim 38, wherein said graphic symbol further portrays a controller function.

40. The device for providing input to a touch screen of claim 35, wherein
5 said software means provides a fader controller emulation and interprets generally linear touch pattern along a defined axis as a command to change the value of a parameter associated with the fader controller emulation.

41. The device for providing input to a touch screen of claim 37, wherein
10 said software means provides a joystick controller emulation and interprets a linear touch pattern at any angle from said center point as a command to move a graphic at the same angle on the display.

42. The device for providing input to a touch screen of claim 41, wherein
15 the rate of movement of the graphic is set by said software means.

43. The device for providing input to a touch screen of claim 41, wherein the rate of movement of the graphic is proportional to the amount of time that a touch detection is maintained at any given angle.

44. The device for providing input to a touch screen of claim 37, wherein said software means provides a mouse controller emulation and interprets a touch

detection displaced from said center point at an angle thereabout as a command to move a cursor at the same angle on the display.

45. The device for providing input to a touch screen of claim 1, further
5 including a plurality of said devices, said touch screen including means for detecting simultaneous operation of said plurality of devices.

46. The device for providing input to a touch screen of claim 45, wherein
10 each of said plurality of devices includes means for generating a touch signal and transmitting said touch signal through a stylus tip to said touch screen.

47. The device for providing input to a touch screen of claim 46, wherein
15 each means for generating a touch signal of each respective device operates within a respective discrete frequency or wavelength band.

48. The device for providing input to a touch screen of claim 47, wherein
said means for detecting simultaneous operation includes multiple discrete band
RF touch position determination means.

20 49. The device for providing input to a touch screen of claim 47, wherein said means for detecting simultaneous operation includes multiple discrete wavelength IR touch position determination means.

50. The device for providing input to a touch screen of claim 47, wherein each of said multiple discrete bands of said touch determination means corresponds to one of said discrete frequency or wavelength bands of said plurality of means for generating touch signals.

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51. The device for providing input to a touch screen of claim 50, wherein said multiple discrete band RF touch position determination means includes a plurality of multi-band RF transmitter/detector units disposed about the touch screen.

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52. The device for providing input to a touch screen of claim 49, wherein said multiple discrete band IR touch position determination means includes a plurality of multi-band IR transmitter/detector units disposed about the touch screen.

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53. The device for providing input to a touch screen of claim 45, wherein said touch screen includes resistive touch detection means, and further includes a plurality of discrete sensing areas.

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54. The device for providing input to a touch screen of claim 53, wherein said plurality of discrete sensing areas are in contiguous arrangement within a single touch screen.

55. The device for providing input to a touch screen of claim 54, wherein each of said sensing areas is bordered by sensing electrodes that locate a touch within the respective sensing area.

5 56. The device for providing input to a touch screen of claim 54, wherein at least one of said plurality of devices is operable in a respective one of said sensing areas.

10 57. The device for providing input to a touch screen of claim 20, said post including a recess formed in said bottom surface, and an adhesive layer disposed in said recess.

15 58. The device for providing input to a touch screen of claim 57, wherein said adhesive layer is greater in thickness than the depth of said recess, and a peripheral edge portion of said bottom surface is disposed in minimally spaced apart disposition to the touch screen.

59. The device for providing input to a touch screen of claim 20, wherein said post includes a top surface having a contoured configuration.

20 60. The device for providing input to a touch screen of claim 20, wherein said post includes a top surface having a cushion layer adhered thereto.

61. The device for providing input to a touch screen of claim 20 wherein said post includes a top surface, and further including a rocker plate secured at said top surface.

5 62. The device for providing input to a touch screen of claim 61, wherein said rocker plate includes a lug projecting from a medial portion thereof, and a central opening in said top surface dimensioned to receive said lug in snap-engaged, freely rotating fashion, said rocker plate being spaced apart from said top surface and rockable about said lug in any direction.

10 63. The device for providing input to a touch screen of claim 20, wherein said post includes a mushroom configuration having a crown supported on a narrow stem.

15 64. The device for providing input to a touch screen of claim 63, wherein the bottom surface of said stem is secured to the touch screen.

20 65. The device for providing input to a touch screen of claim 20, said post including a base and a distal end, and said distal end is wider than said base.

 66. The device for providing input to a touch screen of claim 65, said post including a base and a distal end, and said base is wider than said distal end.

67. The device for providing input to a touch screen of claim 1, wherein said base member defines a bottom opening, a control rod having a lower end with a stylus tip, and means for supporting said control rod on said base member with said stylus tip spaced closely to the touch screen to provoke a touch
5 detection.

68. The device for providing input to a touch screen of claim 67, said means for supporting said control rod including a universal bearing engaging a medial portion of said control rod.

69. The device for providing input to a touch screen of claim 68, further including a membrane extending radially from said control rod to said base member, said membrane formed of an elastic, resilient web.

70. The device for providing input to a touch screen of claim 67, said means for supporting said control rod including a first membrane extending radially from a medial portion of said control rod to said base member, said first membrane formed of an elastic, resilient web.

71. The device for providing input to a touch screen of claim 70, further including a second membrane extending radially from an upper end of said control rod to said base member, said second membrane formed of an elastic, resilient web.

72. The device for providing input to a touch screen of claim 68, said stylus tip being mounted in telescoping fashion in said lower end of said control rod, and resilient means for biasing said stylus tip to extend toward the touch
5 screen.

73. A capacitive touch sensor controller, including:
a web extending longitudinally;
a pair of sensor electrodes secured to longitudinally opposed ends of said
10 web;
a conductive layer secured to said web;
at least one power rail extending longitudinally along said web between
said sensor electrodes;
software means connected to said sensor electrodes for determining the
15 position of a touch point on said web.

74. The touch sensor controller of claim 73, wherein said software means includes means for emulating a fader controller in response to sliding touch on
said web.

75. The touch sensor controller of claim 73, further including a guide ridge extending longitudinally on said web and disposed to guide a sliding touch longitudinally therealong.

76. The touch sensor controller of claim 75, further including a groove extending longitudinally in said guide ridge to guide a stylus in sliding translation therealong.

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77. The touch sensor controller of claim 75, further including a fader cap slidably secured to said guide ridge.

78. The touch sensor controller of claim 77, further including a stylus tip
10 extending from said fader cap toward said longitudinal web.

79. The touch sensor controller of claim 78, further including a touch signal generator disposed in said fader cap and connected to said stylus tip.

15 80. A resistive touch sensor controller, including:
a web extending longitudinally;
a pair of electrical contacts secured to longitudinally opposed ends of said web;
a conductive layer secured to said web;
20 software means connected to said electrical contacts for determining the position of a touch point on said web as a function of said signals.

81. The touch sensor controller of claim 80, wherein said software means includes means for emulating a fader controller in response to sliding touch on said web.

5 82. The touch sensor controller of claim 81, further including a guide ridge extending longitudinally on said web and disposed to guide a sliding touch longitudinally therealong.

10 83. The touch sensor controller of claim 80, wherein said longitudinal web is curved into a closed loop emulative of circular knob rotation.

84. A device for providing input to a touch screen having a peripheral edge, including:

15 a flexible track mounted at the peripheral edge of the touch screen, said flexible track being extendable along an axis extending inwardly on said screen; and,

 means for detecting extension and retraction of said flexible track with respect to the peripheral edge of the touch screen and correlating the extension and retraction with a controller function.

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85. The device for providing input to a touch screen of claim 84, wherein said means for detecting includes a stylus tip extending from a distal end of said

flexible track toward the touch screen, and means for connecting said stylus tip to a touch signal generator.

86. The device for providing input to a touch screen of claim 85, wherein
5 said means for connecting includes at least one flexible conductor extending along said flexible track.

87. The device for providing input to a touch screen of claim 84, wherein
10 said means for detecting includes a spindle about which said flexible track is passed, and means for sensing rotation of said spindle and converting said rotational data into location coordinates of said cap end of said flexible track.

88. The device for providing input to a touch screen of claim 87, wherein
15 said spindle includes radial teeth, and said flexible track includes a toothed surface adapted to engage said radial teeth.

89. The device for providing input to a touch screen of claim 87, further
including motor means for driving said spindle to extend and retract said flexible track with respect to the peripheral edge of the touch screen.

90. The device for providing input to a touch screen of claim 84, further
including keeper means for directing said flexible track along said axis.

91. The device for providing input to a touch screen of claim 90, wherein said keeper means includes means for maintaining contact of said cap on the touch screen.

5 92. The device for providing input to a touch screen of claim 10, wherein said fader cap includes touch switch means for connecting said battery to said touch signal generator in response to fingertip touch on said fader cap.

10 93. The device for providing input to a touch screen of claim 25, wherein said knob cap includes a touch switch for connecting said battery to said touch signal generator in response to fingertip touch on said knob cap.